

REMARKS

In accordance with the foregoing, claims 1, 3 and 5 have been amended and claim 2 has been cancelled. Therefore, claims 1, 3 and 5 are pending and under consideration, which is respectfully requested.

No new matter has been added and accordingly, entry and approval of claims 1, 3 and 5 is respectfully requested.

OBJECTION

Claim 3 is objected to because of the informalities. Therefore, the Applicants amended the claim 3 as follows:

3. (Currently Amended) The A- thin film forming method according to claim 21, wherein an initial value of the supply flow amount ratio in the forming of the first thin film forming-step is in a range of 0.02 to 0.2 ~~0.05~~.

Antecedent basis for the above amendment can be found at page 16, lines 15-22 of the application specification. Accordingly, the objection should be withdrawn.

REJECTION OF CLAIMS 1-3 UNDER 35 U.S.C.103(a) AS BEING UNPATENTABLE OVER ITO ET AL (JP2000-255579) IN VIEW OF INGLE ET AL (US2004/0083964).

As shown in the listing of the claims, independent claim 1 is amended to have features embracing that the forming of the first thin film is performed under a first condition that the **supply flow amount ratio decreases continuously from an initial value into a specific value of 0.05 or lower within 2 to 5 seconds.**

Antecedent basis for the above amendment can be found from page 13, line 25 to page 15, line 2, and page 16, lines 15-22 of the application specification.

The Examiner alleges that reference Ito et al teaches a thin film forming method for plasmatizing a mixture gas, the mixture gas consisting of a monomer gas (HMDSO, TEOS) [0036] and an oxidizing reactive gas; the thin film deposited is silicon oxide; the flow amount ratio of the monomer gas with respect to the oxidizing gas is varied during deposition (Claim 1); and the flow amount ratio decreases continuously while forming a first thin film (Claim 2). The

Examiner further alleges that reference **Ito et al** teaches a second step of forming a thin film by increasing the flow amount ratio after the first film is formed (Claim 3).

The Examiner also alleges that reference **Ingle et al** teaches forming a silicon oxide film exhibiting high conformality wherein initially a low flow amount ratio of precursor (TEOS) to oxidizing gas [0091] is used and such ratio is increased in order to increase throughput (Abstract); the ratio may be changed by increasing the flow rate of precursor and reducing the flow rate of oxidizing gas[0094].

Ito et al discloses the initial value of flow amount ratio is 1.0 or 10.0 in Table 1. **Ito et al** does not disclose the initial value of flow amount ratio might be 0.05 in Table 1. However, the current invention of amended independent claim 1 claims that the forming of the first thin film is performed under a first condition that the **supply flow amount ratio decreases continuously from an initial value into a specific value of 0.05 or lower within 2 to 5 seconds** (see amended independent claim 1).

In other words, the current invention discovered the important initial value and the specific value of **supply flow amount ratio** during the thin film forming method for plasmatizing a mixture gas. The current invention also discovered that the initial value of supply flow amount ratio continuously decreases into the specific value within 2 to 5 second.

Specifically, in the forming of the first thin film, a flow rate decreases continuously and gradually from a large initial value of supply flow amount rate while a flow rate (supply flow amount ratio) of the monomer gas, with respect to the reactive gas in the supplied mixture gas is included within at least the above specific value range. By such a first thin film forming, it is possible and technically advantageous to stably form a thin film which has a particularly high gas impermeability without variation.

Throughout the disclosure of **Ito et al**, and **Ingle et al**, none of them expressly or inherently suggest and/or teach that the forming of the first thin film is performed under a first condition that the **supply flow amount ratio decreases continuously from an initial value into a specific value of 0.05 or lower within 2 to 5 seconds** as claimed in amended independent claim 1. None of **Ito et al**, and **Ingle et al**, discloses or suggests the technical effect and advantage achieved by the present invention. Thus, the combination yields unpredictable effect to a person having ordinary skill in the art.

Therefore, the subject matter of amended independent claim 1 as a whole would not have been obvious to one of ordinary skill in the art at the time of the current invention was

made. Allowance of the pending independent claim 1 as amended, as well as depending claims 3 and 5 is respectfully requested. Claim 2 has been cancelled.

REJECTION OF CLAIM 5 UNDER 35 U.S.C.103(a) AS BEING UNPATENTABLE OVER ITO ET AL (JP2000-255579) IN VIEW OF INGLE ET AL (US2004/0083964) AS APPLIED ABOVE AND FURTHER IN VIEW OF VERZARO ET AL ('497).

Claim 5 is depend on amended independent claim 1. As Applicants state above, amended independent claim 1 is directed to a thin film forming method including forming of the first thin film being performed under a first condition that the **supply flow amount ratio decreases continuously from an initial value into a specific value of 0.05 or lower within 2 to 5 seconds.**

In addition to above references of **Ito et al.** and **Ingle et al**, the Examiner applied **Verzaro et al.** reference to reject claim 5.

The Examiner stated that **Verzaro et al.** reference discloses a plasma CVD method of depositing silicon oxide by plasmatizing a mixture gas, said mixture gas comprising HMDSO and oxygen (Col. 5, lines 17-20, Col. 4, lines 1-5); the plasma is formed by supplying high frequency power to an electrode through an impedance matching network; the reflected power is controlled to be 10% or lower than the supplied high frequency power in order to obtain a maximum efficiency in respect of the power supplied to the plasma (Col. 4, line 55-Col. 5, line 4)(pages 4-5 of the non-final Office Action).

However, **Verzaro et al.** reference does not disclose and/or suggest that the forming of the first thin film being performed under a first condition that the **supply flow amount ratio decreases continuously from an initial value into a specific value of 0.05 or lower within 2 to 5 seconds.** Accordingly, **Verzaro et al.** reference does not compensate for the deficiencies discussed above. Therefore, the obviousness rejection of claim 5 should be withdrawn.

CONCLUSION

Thus, it is believed that all rejections have been removed, and the present application is now in condition for allowance with claims 1, 3, and 5 as presented.

Reconsideration and early favorable action on the claims are earnestly solicited.

Serial No. 10/529,362

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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